A QUARTERLY NEWSLETTER ON THE MARYLAND BIOLOGICAL STREAM SURVEY PUBLISHED BY THE MARYLAND DEPARTMENT OF NATURAL RESOURCES MONITORING AND NON-TIDAL ASSESSMENT DIVISION, AND PRIMARILY FUNDED BY THE MARYLAND POWER PLANT ASSESSMENT PROGRAM ENVIRONMENTAL TRUST FUND.

A Note From MBSS HQ

Welcome to the second *e*-version of the MBSS News. Much has happened since our last issue in November, 2001. We're collaborating more and more with other stream monitoring organizations, providing new training opportunities for those interested in learning more about streams, and taking advantage of office time between sampling periods to do some nifty research using the seemingly endless quantity of MBSS data.

In this issue we provide highlights of an analysis of limestone streams in Maryland, an overview of Maryland's Stream Resource Management Goals, summaries of MBSS spring training and benthic macroinvertebrate taxonomy testing, and a welcome to Neal Dziepak, MBSS' newest bug dude.

As always, we encourage you to let us know what you're up to. Updated your web site? Finished a report? If you think our readers may be interested, let us know and we'll spread the word.

MBSS Train(ing) Goes Global

In late February, a total of 59 people representing some 20 different agencies and organizations attended spring 2002 training for the MBSS. The outside organizations represented were: University of Maryland Appalachian Laboratory, Smithsonian Environmental Research Center, Maryland Department of the Environment, Montgomery County Department of Environmental Protection, Baltimore County Department of Environmental Protection and Resource Management, District of Columbia Government Fisheries and Wildlife Division, District of Columbia Government Water Quality Division, Versar, ECS Ltd. National Park Service, St. Mary's College, University of Maryland College Park, Tetra Tech, Skelly & Loy Inc., Environmental Systems Analysis, RKK Engineers, Coastal Resources, and URS Corporation. In recent years, interest in using MBSS methods has bloomed, including international interest from Brazil and Italy. The implications of so many folks using the same methods are truly a bright sign for monitoring in Maryland and elsewhere. SIDENOTE: MBSS staff have chosen their favorite vacation destinations and we intend to develop a marketing plan to these areas–free MBSS training in exchange for plane fare, lodging, and food!

MBSS' Chris Millard demonstrates panning for gold (or is he sampling benthos?) in Joe Branch during spring training

A Twist of Lime(stone)

What are limestone streams? Are fish and macroinvertebrate communities in limestone streams different from those in non-limestone streams? Do we need separate reference conditions and biological indicators (Indices of Biotic Integrity, or IBIs) for limestone streams? If so, should we develop different biocriteria for these streams? These are a few of the questions discussed at a recent special session on biocriteria development held this March as part of the annual Mid-Atlantic Water Pollution Biology Workshop at Cacapon State Park near Berkeley Springs, West Virginia. Biologists from Pennsylvania, Virginia, Maryland, Interstate Commission on the Potomac River Basin, Tetra Tech, Inc., and U.S. EPA presented ecological data from limestone streams in different areas of the Mid-Atlantic region. MBSS data from the Ridge and Valley and Appalachian Plateau physiographic provinces were used to address these questions.

To examine MBSS data, we separated limestone from non-limestone stream sites (remember, they're randomly-selected) using a GIS coverage titled Preliminary Lithogeochemical Map Showing Near-Surface Rock Types in the Chesapeake Bay Watershed, Virginia and Maryland (say that 10 times real fast!) This map delineates the limestone regions of Maryland. We then compared characteristics of minimally degraded streams in both the limestone regions (18 sites) with streams in the same watersheds but outside the limestone regions (26 sites).

Acid Neutralizing Capacity, pH and conductivity were all higher at limestone sites, as was agricultural land use. Pearl dace, checkered sculpin and white sucker were more abundant in limestone sites, along with riffle beetles, hydropsychid caddisflies, amphipods and isopods. However, there was no significant difference in the fish or benthic IBIs from both stream types. Based on this analysis of MBSS data, we do not see the need for separate reference conditions for limestone streams in Maryland. An analysis of limestone streams in the broader Mid-Atlantic Highlands Region, by Alan Herlihy (Oregon State University) resulted in the same basic conclusion. In Maryland, however, a focused study with pre-selected sites may provide more insight into the need for separate stream health indicators for limestone streams.

For more information on the regional effort to examine the need for limestone stream indicators, contact Maggie Passmore at 304-234-0245; email Passmore.Margaret @epamail.gov. For details of the analysis of MBSS data in limestone streams, contact Scott Stranko at sstranko@dnr.state.md.us or phone 410-260-8605. To learn more about the lithogeochemical map, contact the U.S. Geological Survey in Reston, Virginia.

Marsh Run is a typical limestone stream in Washington County.

The phrase "limestone stream" really represents a gradient from "pure" limestone, such as the so-called "chalk streams" in England, where the stones are cemented together with calcium precipitates, to "limestone-influenced" streams. Characteristics of limestone streams include:

Water quality
- Alkalinity > 75 ppm
- pH >7.5
- Stable temperature

Physical / Landscape characteristics
- Low gradient
- Primarily agricultural land use

Fish
- More and larger trout
- Lower overall abundance
- More pearl dace

Benthic macroinvertebrates
- Low taxa richness
- Dominated by crustacea (scuds, amphipods)
- High abundance of taxa that are there

Newest MBSS benthon

What kind of person does it take to spend hour after hour poring through streambed muck removing drably-colored worm-like creatures a little larger than a pinhead? A very patient one with 20/20 vision, and Neal Dziepak is our man. Joining MBSS last January, Neal recently completed his M.S. in Biology from Tennessee Tech University. His Masters work involved an analysis of benthic macroinvertebrate communities in a stream undergoing mitigation. Stationed in the DNR field office in Annapolis, Neal oversees the processing and identification of the 500 or so Maryland Stream Waders volunteer-collected benthic macroinvertebrate samples. Welcome Neal.

Neal Dziepak at home in the lab

Maryland's Stream Resources Management Goals

During the past year, a workgroup composed of local government representatives and state agency staff (DNR, Maryland Department of the Environment, Maryland Department of Agriculture, and Maryland Department of Planning) has been working to develop goals for effective management of non-tidal stream resources throughout the state. These commitments are spelled out in the new Chesapeake Bay Agreement (aka, C2K). Maryland's Stream Resources Management Goals are intended to assess, protect and restore water quantity and quality, physical habitat and biological communities of streams to the highest point practical. Stream goals are part of a larger effort by Maryland's Tributary Strategies Teams to address overall habitat quality (both tidal and non-tidal) on a Tributary Basin scale. Stream goals are being developed at both a local- and state-scale, with different time frames and objectives.

With a targeted completion date of 2010, local-scale objectives will:

- focus on fine scale (stream reach and sub-watershed [Maryland 12-digit or smaller]) management units
- be developed by local entities and will reflect local programs, issues and expertise
- address local resources
- be updated annually
- allow better targeting, funding and permitting opportunities
- incorporate outcomes of Watershed Management Planning

Since most stream resources are managed at a local scale, improvements to stream health statewide will depend on local goals and progress.

The statewide goal is to maintain or improve mean MBSS Index of Biotic Integrity (IBI; fish and benthic macroinvertebrate) scores on a watershed level (MD 8-digit). This use of MBSS data in trend analyses will allow DNR to communicate to the public and U.S. EPA how Maryland's streams are doing. Although MBSS data will be the focus of watershed trend assessments, locally-collected stream data will also be used as a supplement. Significant changes in watershed-wide IBI scores will reflect local activities and may be detectable only over the long term as a result of cumulative effects from multiple projects.

For more information on Maryland's Stream Resources Management Goals, contact Christine Conn at (410) 260-8792

Email: cconn@dnr.state.md.us

For more information on Maryland's Tributary Strategies Teams, point your browser at

http://www.dnr.state.md.us/bay/tribstrat/index.html.

Will the real Ephemerella please stand up?

Bugs, bugs everywhere – but which ones are they? That's a question repeatedly asked by benthic macroinvertebrate taxonomists tasked with sampling and identifying these creatures for stream quality assessment and other goals. To test the knowledge of area taxonomists, MBSS staff organized an all-day benthic macroinvertebrate taxonomy test held at Towson University on 1 March 2002. Thirteen folks from government agencies, consulting firms, and universities gathered at the lab of Dr. Susan Gresens, a Towson biology professor and stream ecologist, to try to identify the 42 genera in the test.

How'd they do? Pretty good. Nobody got them all correct, but a few folks missed only one or two genera. Others realized just how hard this really is and how important practice and regular testing can be. One obvious benefit of such testing is knowledge of data quality. If we are to share each other's data, we'll all need to know more about data quality, including accuracy of taxonomic identifications. To help area taxonomists do a better job, MBSS staff will organize and run a training session in both family and genus level benthic macroinvertebrate taxonomy this coming November. See the next issue of the News for updates.

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